

TABLE 1
BRUSH SPRING ANALYSIS
COMPARISONS OF BRUSH SPRING TENSION

BRUSH PART NUMBER	STARTER GENERATOR	SPECIFIED TENSION/ OVERHAUL MANUAL	BRUSH AREA SQ. IN.	SPRING PRESSURE LOW OZ/SQ IN	SPRING PRESSURE AVERAGE OZ/SQ IN	SPRING PRESSURE HIGH OZ/SQ IN
N1828-1	23032-1022	40-56 oz	.294	136.05	163.26	190.48
N1828-1	150SG121Q	32-48 oz	.294	108.84	136.06	163.27
23032-1380	23032-010	32-48 oz	.201	159.20	199.00	238.81
150SG1009-5	150SG111Q	32-48 oz	.201	159.20	199.00	238.81
N1830-1	23081-018	28-40 oz	.237	118.14	143.46	168.78
N1830-1	200SGL118Q	30-39 oz	.237	126.58	140.57	164.56
N1831-1	23048-001	40-55 oz	.397	100.76	119.65	138.54
N1831-1	250SG111Q	40-55 oz	.397	100.76	119.65	138.54
N1831-1	23079-000-1	50-64 oz	.397	125.94	143.57	161.21
N1831-1	300SGL119Q	40-55 oz	.397	100.76	119.65	138.54
N1831-1	300SGL116Q	40-55 oz	.397	100.76	119.65	138.54

Example: Using the table above, calculate the tension for a new brush spring that matches the desired tension in a known brush spring.

A new brush spring will be designed that will apply the same pressure on the brushes as the brushes in a 300SGL116Q. From the table above, the pressure on the brushes of a 300SGL116Q Starter-Generator = 119.65 oz/sq in.

If the size of the brush is known, such as the N1829-1 Brush = .201 sq in.

$$\text{Stress} \times \text{Area} = \text{Force}$$

Then the tension on the brush spring is: 119.65 oz/sq. in. X .201 sq. in = 24.05 oz

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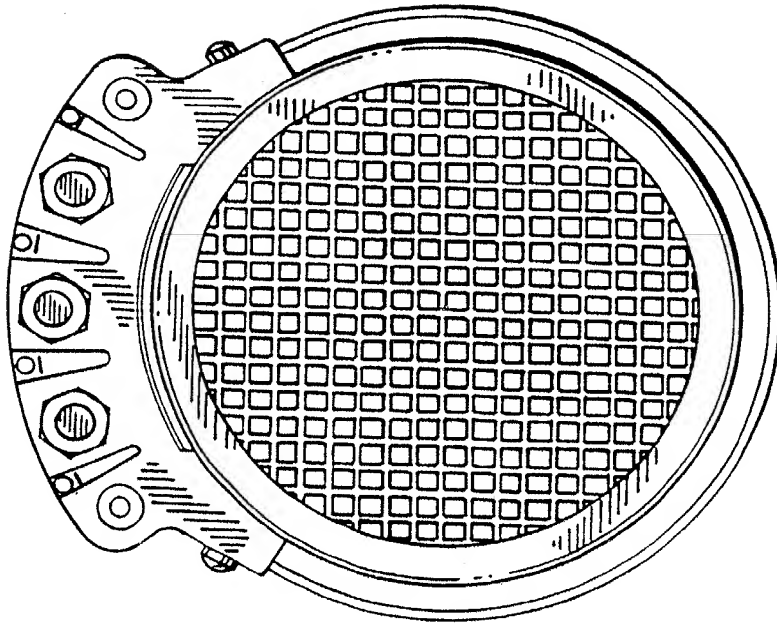


FIG. 1a

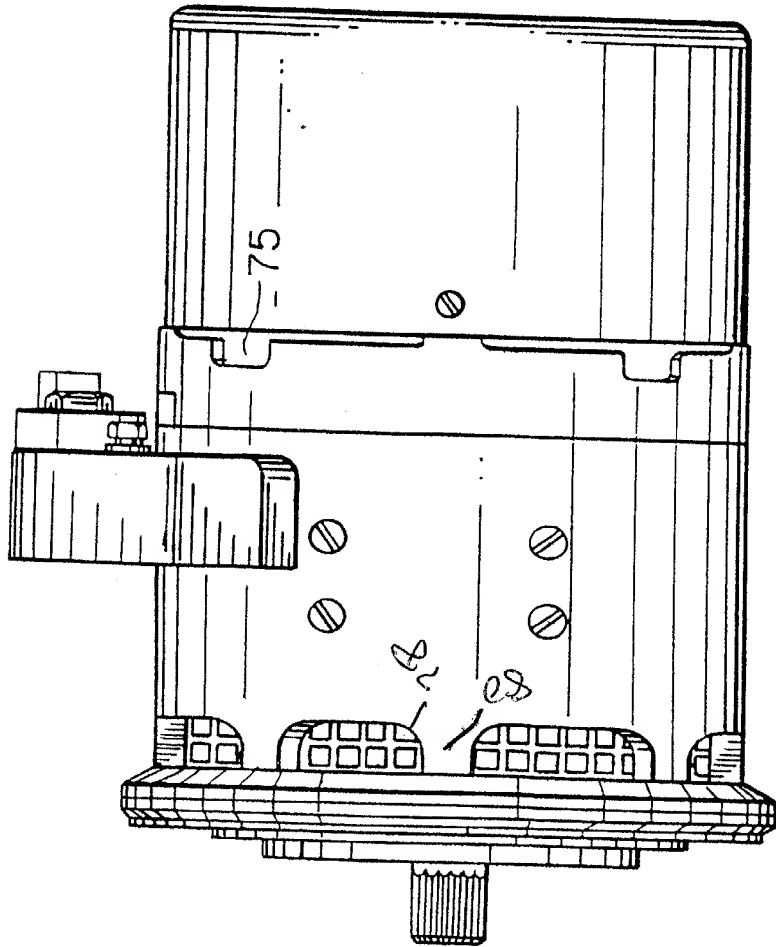


FIG. 1

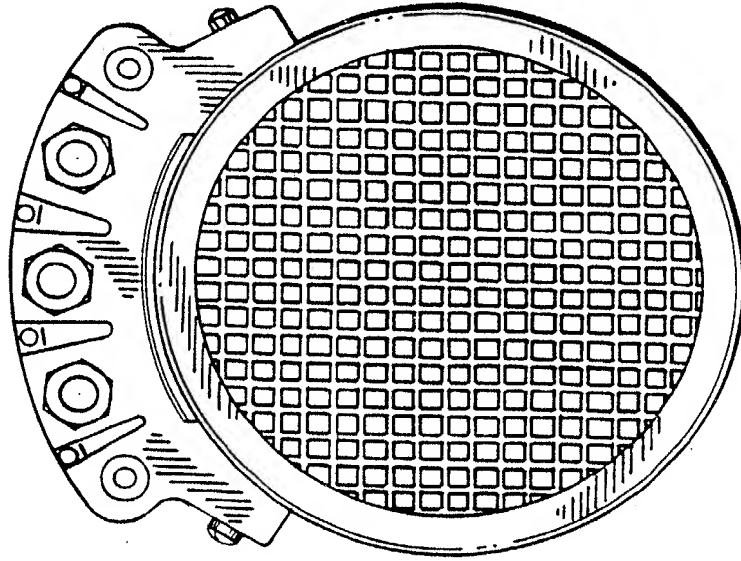


FIG. 2a
PRIOR ART

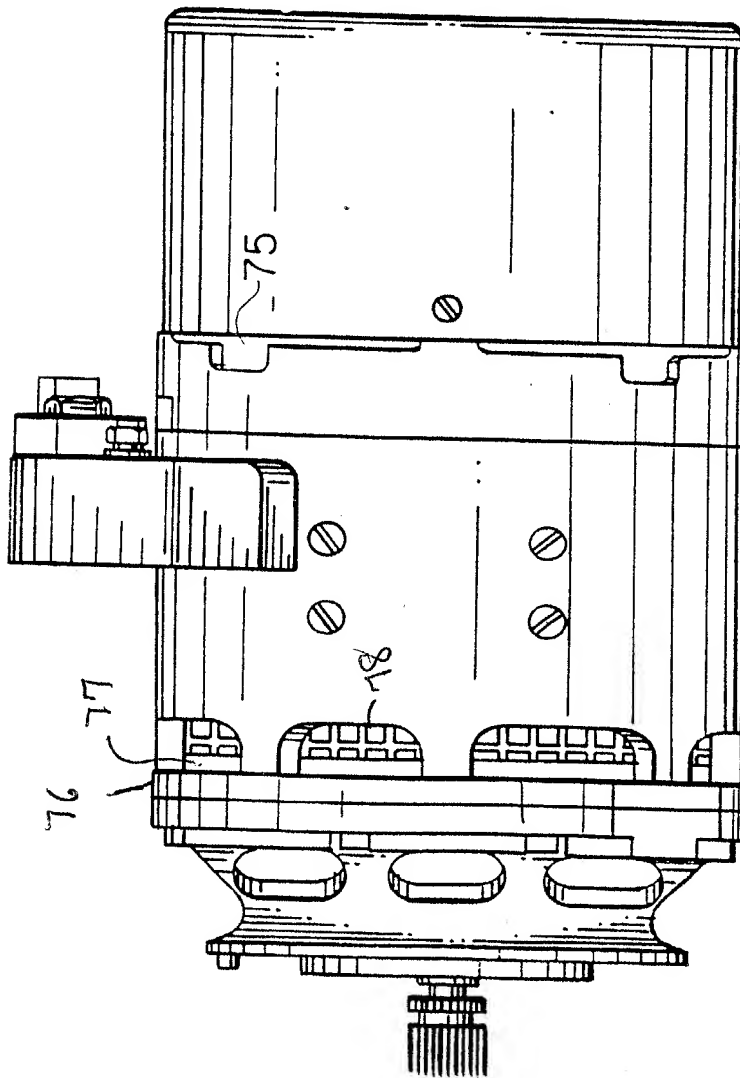


FIG. 2
PRIOR ART

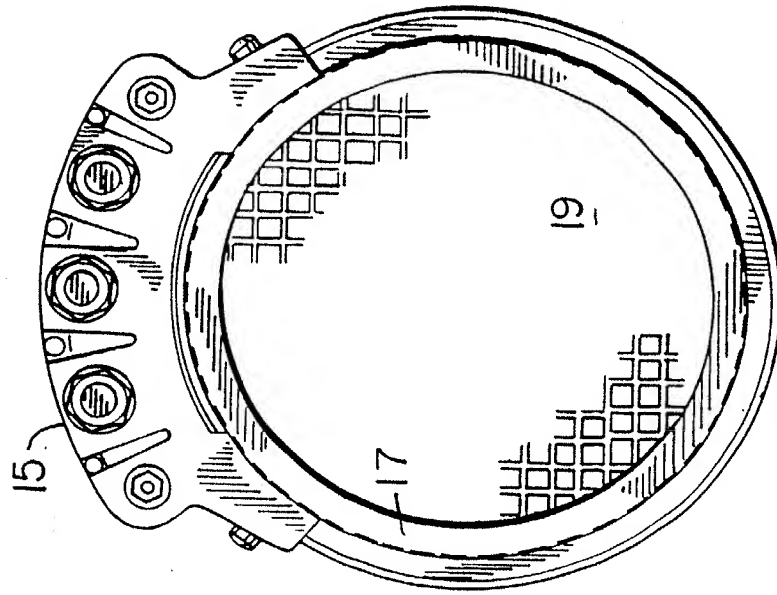


FIG. 3a

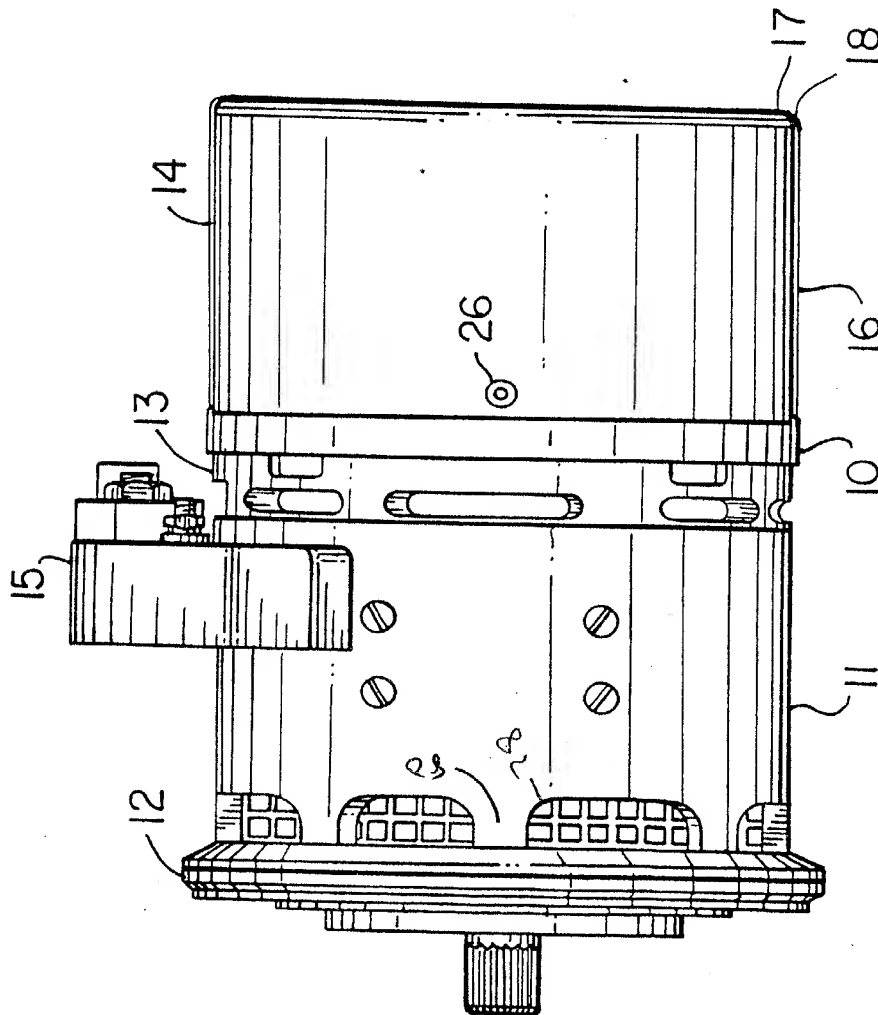


FIG. 3

FIG. 4a

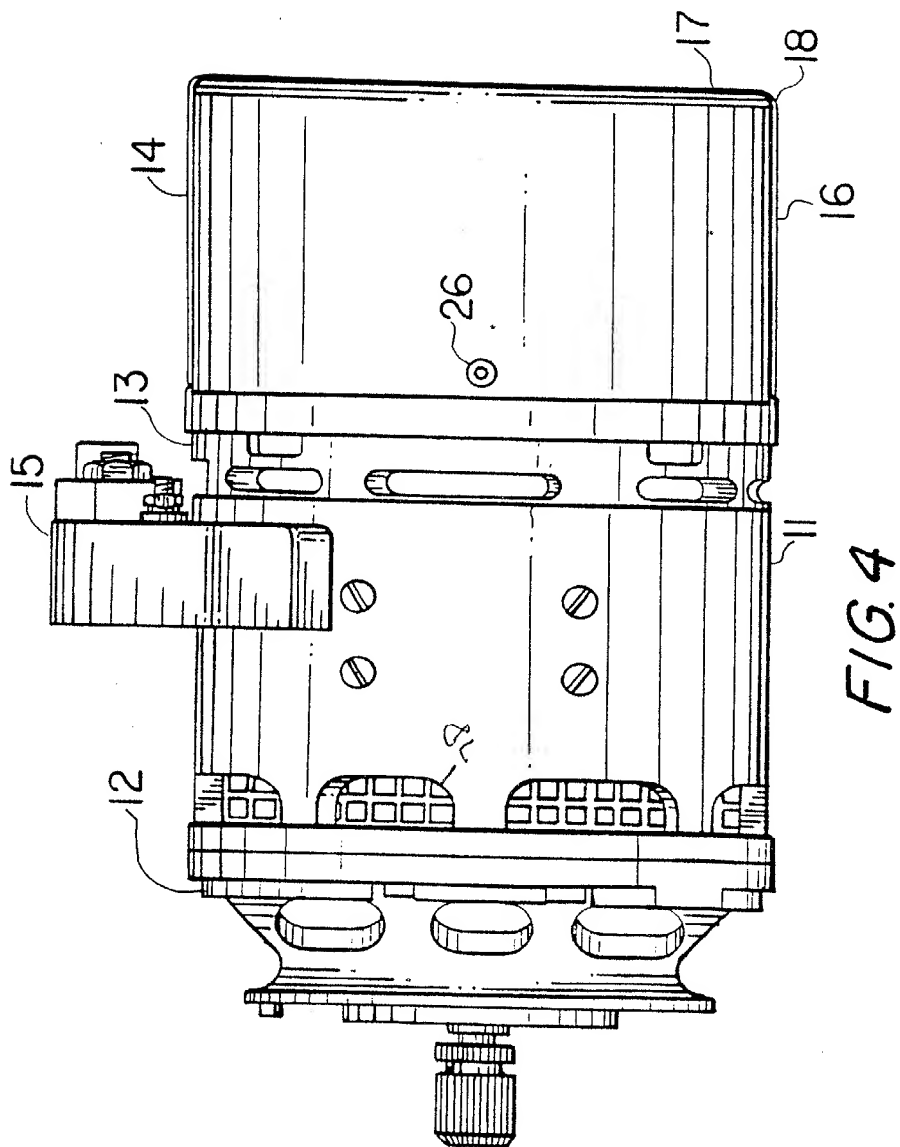
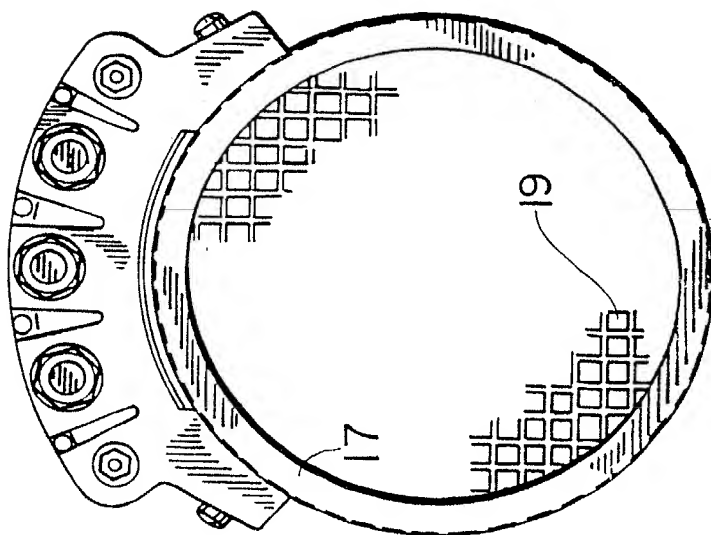


FIG. 4

FIG. 5 is a perspective view of the container 10 in a closed position.

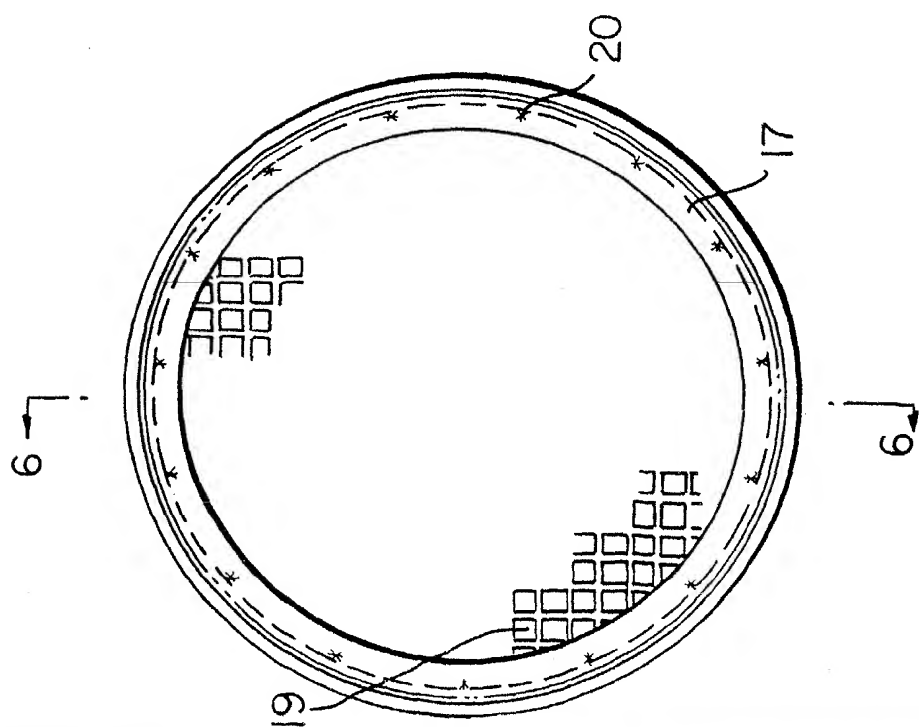


FIG. 5

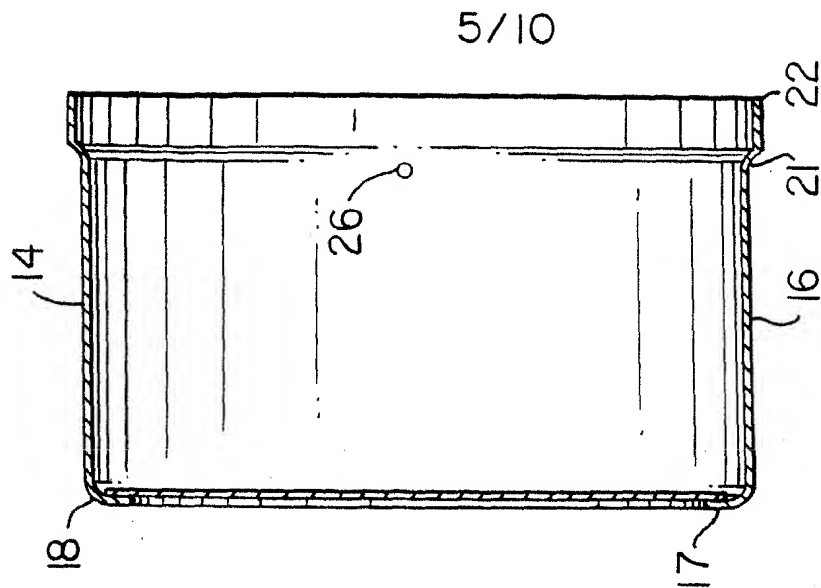


FIG. 6

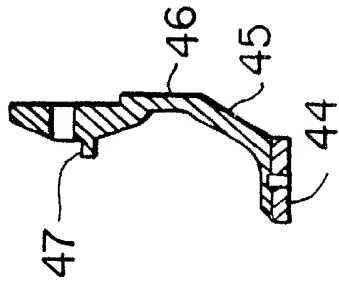


FIG. 7a

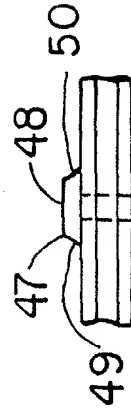


FIG. 7b

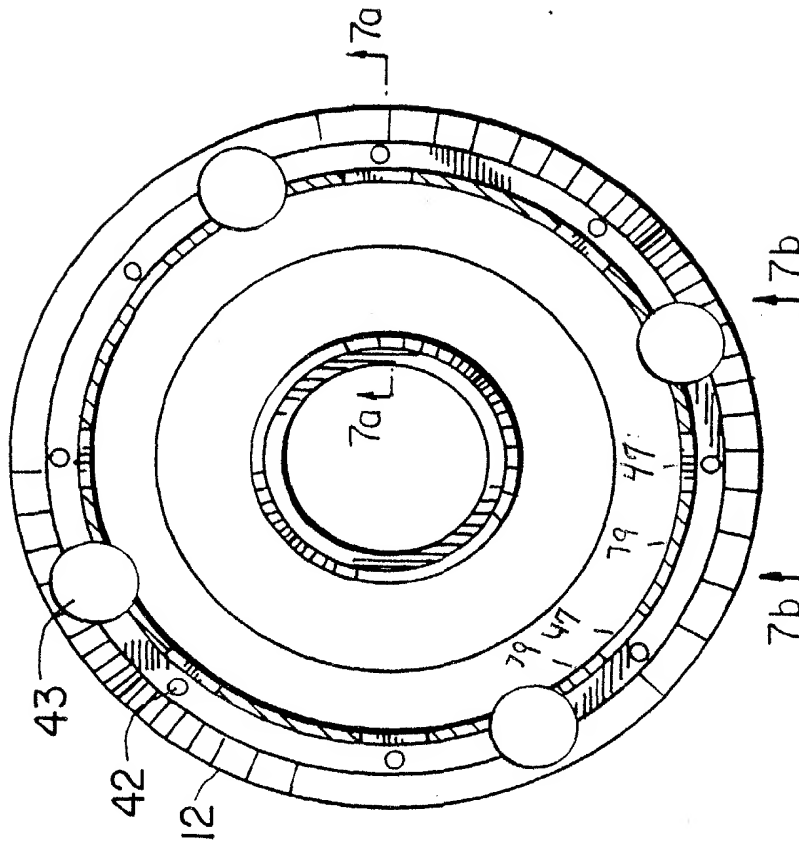


FIG. 7

FIG. 8 is a perspective view of the device of FIG. 7, showing the device in a closed position. The device is shown in a perspective view, and the components are labeled with reference numerals. The device is shown in a perspective view, and the components are labeled with reference numerals.

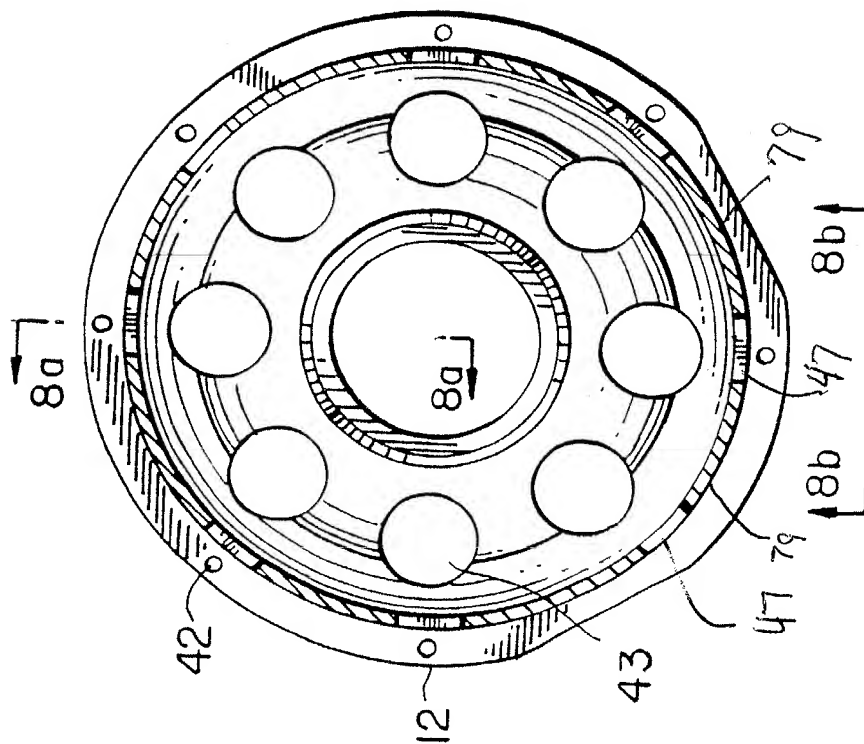


FIG. 8

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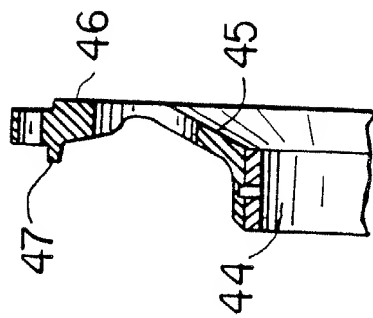


FIG. 8a

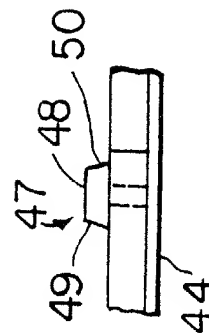


FIG. 8b

FIG. 9 is a cross-sectional view of the device taken along line A-A of FIG. 9a, showing the internal components including the valve assembly, the actuator, and the housing. The valve assembly includes a valve body 24, a valve seat 25, and a valve stem 26. The actuator includes a piston 31, a piston rod 32, and a piston head 33. The housing includes a housing body 34, a housing flange 35, and a housing cap 36. The device is shown in a closed position, with the valve stem 26 seated against the valve seat 25.

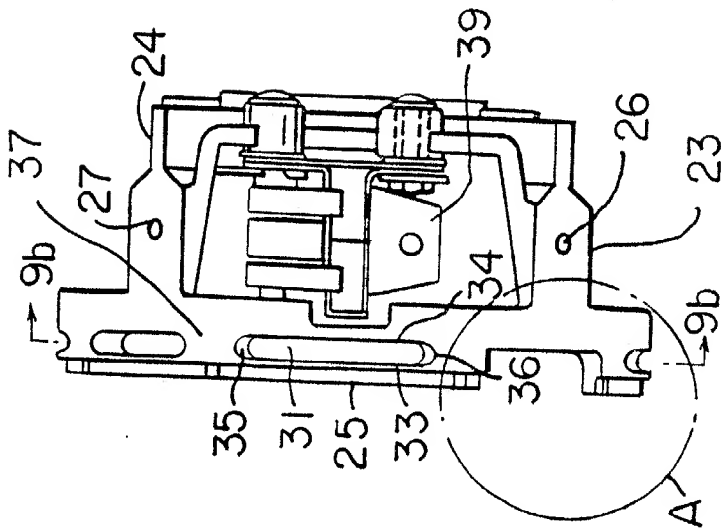


FIG. 9

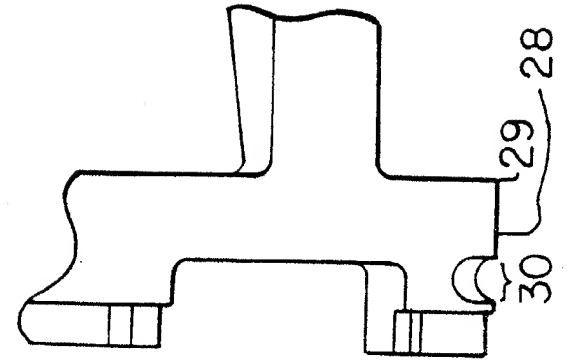


FIG. 9a

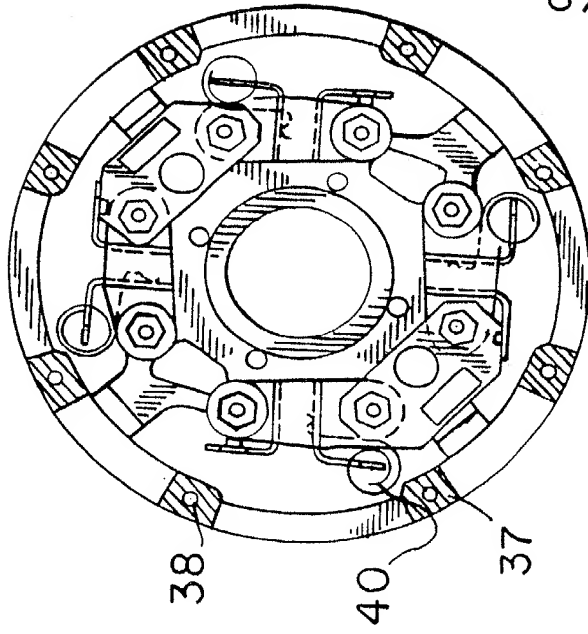


FIG. 9b

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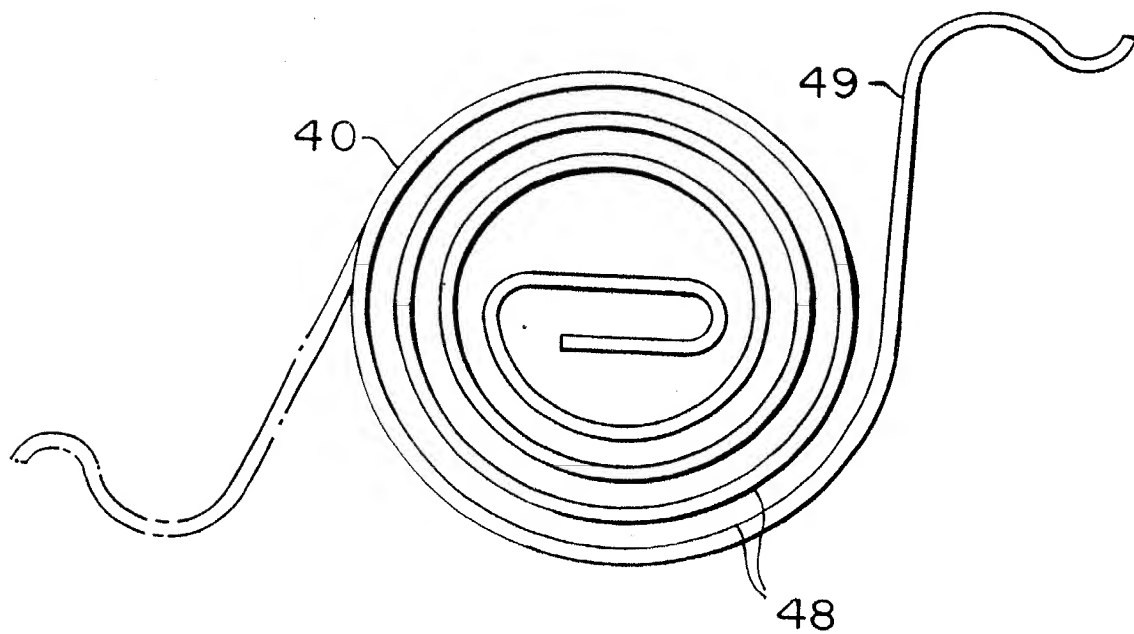


FIG. 10

FIG. 11a

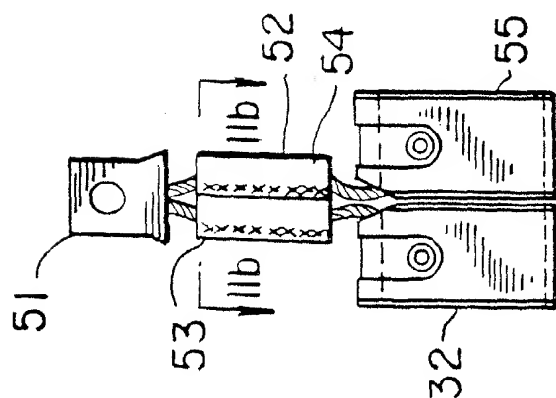


FIG. 11

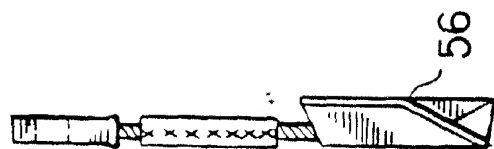


FIG. 11b

